

**Table 1. Parks Canada ecological monitoring framework and indicators**

Biodiversity	Ecosystem functions	Stresses
<b>Species richness</b> <ul style="list-style-type: none"> <li>• Change in species richness</li> <li>• Number and extent of exotics</li> </ul> <b>Population dynamics of indicator species</b> <ul style="list-style-type: none"> <li>• Mortality/natality rates</li> <li>• Immigration and emigration</li> <li>• Population variability</li> </ul> <b>Trophic structure</b> <ul style="list-style-type: none"> <li>• Size class distribution of all taxa</li> <li>• Predation levels</li> </ul>	<b>Succession and retrogression</b> <ul style="list-style-type: none"> <li>• Disturbance size and frequency (fire, insects, flooding)</li> <li>• Vegetation age class distribution</li> </ul> <b>Productivity</b> <ul style="list-style-type: none"> <li>• Landscape or by site</li> </ul> <b>Decomposition</b> <ul style="list-style-type: none"> <li>• By site</li> </ul> <b>Nutrient retention</b> <ul style="list-style-type: none"> <li>• Ca, N by site</li> </ul>	<b>Human land use patterns</b> <ul style="list-style-type: none"> <li>• Land use, roads density, population density</li> </ul> <b>Habitat fragmentation</b> <ul style="list-style-type: none"> <li>• Patch size</li> <li>• Interpatch distance forest interior</li> </ul> <b>Pollutants</b> <ul style="list-style-type: none"> <li>• Sewage, petrochemicals, etc.</li> <li>• Long-range transportation</li> </ul> <b>Climate</b> <ul style="list-style-type: none"> <li>• Weather data</li> <li>• Frequency of extreme events</li> </ul> <b>Other</b> <ul style="list-style-type: none"> <li>• Park-specific issues</li> </ul>

**Table 2. Significant stresses affecting Canadian national parks**

Stresses originating within the park	Stresses originating outside the park and acting directly on parks	Stresses affecting the region of which the park is a part
<b>Infrastructure</b> <ul style="list-style-type: none"> <li>• Visitor and tourism facilities</li> <li>• Park infrastructure</li> <li>• Roads, railways and utility corridors</li> </ul> <b>Activities</b> <ul style="list-style-type: none"> <li>• Park management practices</li> <li>• Human disturbance of wildlife</li> <li>• Sport fishing</li> <li>• Vehicle/animal collisions</li> <li>• Poaching</li> </ul>	<b>Exotic species</b> <ul style="list-style-type: none"> <li>• Vegetation</li> <li>• Mammals</li> <li>• Birds</li> <li>• Fish</li> <li>• Invertebrates</li> <li>• Microorganisms</li> </ul> <b>Pollution</b> <ul style="list-style-type: none"> <li>• Solid waste</li> <li>• Petrochemical pollution</li> <li>• Pesticides</li> <li>• Sewage</li> <li>• Climate change</li> <li>• Heavy metals</li> <li>• Ground level ozone</li> <li>• Acid deposition</li> </ul>	<b>Infrastructure</b> <ul style="list-style-type: none"> <li>• Urbanization</li> <li>• Dams</li> <li>• Mining</li> </ul> <b>Resource use</b> <ul style="list-style-type: none"> <li>• Forestry</li> <li>• Agriculture</li> <li>• Hunting</li> <li>• Commercial fishing</li> </ul>

Table 17. Comparison of Final to Initial Ecological Indicators

Principle P2. Maintain Ecological Integrity		
FINAL CRITERION	FINAL INDICATOR	INITIAL INDICATOR
C2.1 Landscape function	I2.1.1 Disturbance processes	I2.1.2 Disturbance processes
	I2.1.2 Hydrologic function	I2.1.1 Hydrologic condition
	I2.1.3 Long-term community dynamics	X
C2.2 Landscape structure/composition	I2.2.1 Landscape diversity	I2.2.1 Vegetation types and structural classes
	I2.2.2. Landscape patterns	I2.2.2 Fragmentation and connectivity
C2.3 Ecosystem function	I2.3.1 Productive capacity	I2.3.2 Primary productivity
	I2.3.2 Functional diversity	I2.6.2 Community guild structure
	I2.3.3 Invasive species	I2.6.1 Exotic species
	I2.3.4 Nutrient cycling	I2.3.1 Nutrient cycling
	I2.3.5 Carbon sequestration	X
	I2.3.6 Stream function	I2.4.6 Morphology and function of stream channels
C2.4 Ecosystem structure/composition	I2.4.1 Air, soil, and water quality	I2.2.5 Water quality (e.g., dissolved oxygen, suspended sediments, and water nutrients)
		I2.4.1 Pollutants
		I2.4.2 Soil quality (e.g., soil compaction, displacement, erosion, puddling, loss of organic material)
	I2.4.2 Ecological legacies	I2.4.3 Soil nutrients
	I2.4.3 Special habitats	I2.4.4 Ecological legacies and structural elements
C2.5 Population function	I2.4.4 Species richness	I2.4.5 Ecologically sensitive areas (e.g., riparian areas are retained)
		I2.6.3 Species at risk
C2.6 Population structure/composition	I2.5.1 Population viability	I2.7.2 Minimum viable populations
C2.7 Organism function	I2.6.1 Populations of indigenous species	I2.5.1 Populations of indigenous species
	I2.7.1 Genetic mixing	I2.8.1 Nonnative or enhanced stock
	I2.7.2 Genetic migration	X
C2.8 Organism structure/composition	I2.7.3 Genetic selection	I2.8.1 Nonnative or enhanced stock
	I2.8.1 Genetic diversity	X